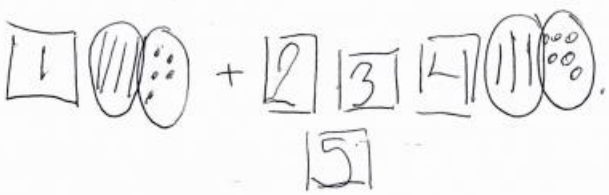
Module 1: Section 1D: A Closer Look at the Standards for Mathematical Content: Second Grade Sample Tasks

Task 1:

2nd Grade Math Task

PART I: Use base ten blocks or drawings to solve the problem and explain your thinking.

145 + 436 = 581



PART 2: Frank solved the problem using the following strategy. Will his strategy always work?

Frank's thinking:

I counted the hundreds first, so 100, 200, 300, 400, 500.
Then I counted the tens, so 510, 520, 530, 540, 550, 560, 570.
Then I counted the ones, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581.

So, 145 + 436 = 581.

Will Frank's strategy always work? Explain your answer.

yes, it will work. Counteding by hundreds then tens then ones.

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Task 2:

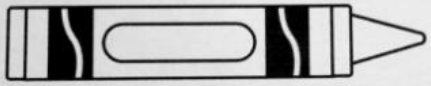
Measure the length to the nearest centimeter

Rembember: Line up the left edge of the object with zero on the ruler.

Example:

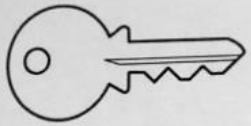
7 centimeters

1.



10 centimeters

2.



6 centimeters

3.

11 centimeters

4.

8 centimeters

5.

19 centimeters

6.

11 centimeters

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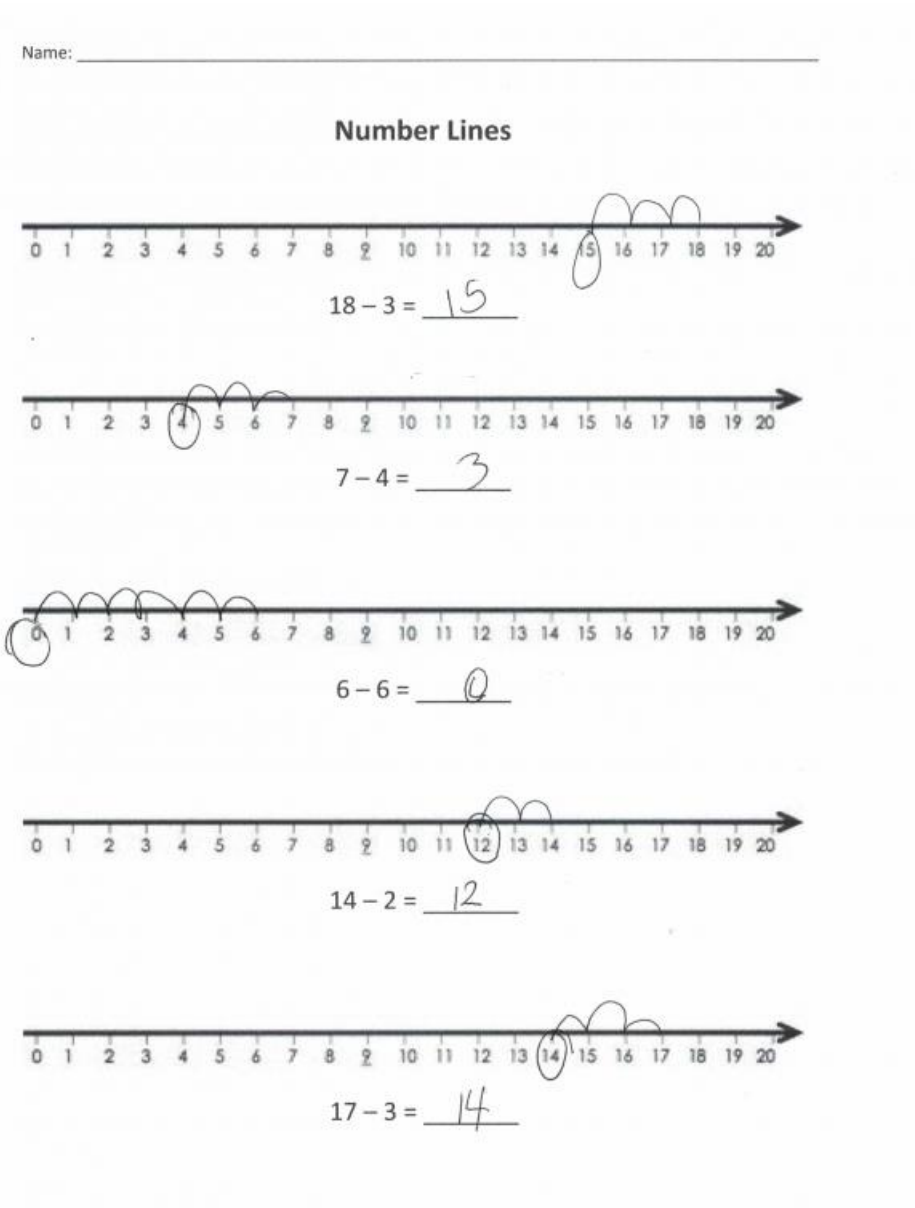
Task 3:



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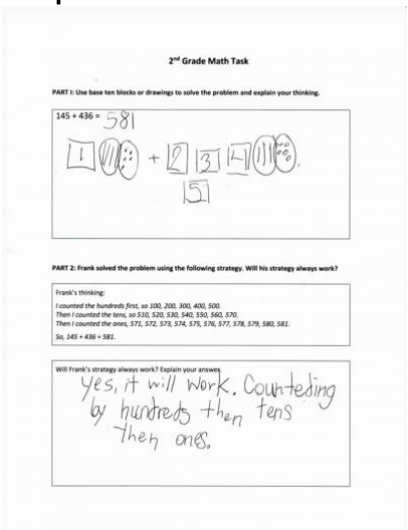
Module 1: Section 1D: A Closer Look at the Standards for Mathematical Content: Second Grade Sample Tasks

Participant Guide

Student Work Sample	Standard of Mathematical Content Focus	Degree of Alignment	Standards of Mathematical Practice (SMP) Focus
Sample Task 1:  2nd Grade Math Task PART I: Use base ten blocks or drawings to solve the problem and explain your thinking. 145 + 436 = 581 PART 2: Frank solved the problem using the following strategy. Will his strategy always work? Frank's thinking: I counted the hundreds first, so 100, 200, 300, 400, 500. Then I counted the tens, so 510, 520, 530, 540, 550, 560, 570. Then I counted the ones, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581. So, 145 + 436 = 581. Will Frank's strategy always work? Explain your answer. Yes, it will work. Counteding by hundreds then tens then ones.	Can you identify the targeted content standard(s) for this task?	• None/Weak • Partial • Strong	Can you identify the targeted practice standard(s) for this task?

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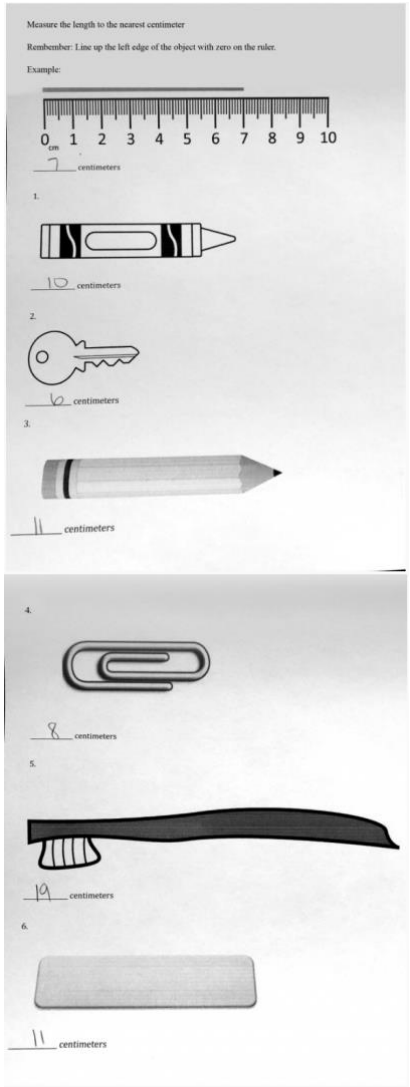
Student Work Sample	Standard of Mathematical Content Focus	Degree of Alignment	Standards of Mathematical Practice (SMP) Focus
Sample Task 2:  	Can you identify the targeted content standard(s) for this task?	• None/Weak • Partial • Strong	Can you identify the targeted practice standard(s) for this task?

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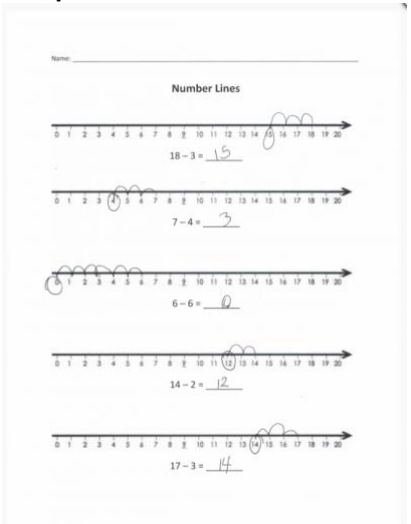
Student Work Sample	Standard of Mathematical Content Focus	Degree of Alignment	Standards of Mathematical Practice (SMP) Focus
Sample Task 3:  	Can you identify the targeted content standard(s) for this task?	• None/Weak • Partial • Strong	Can you identify the targeted practice standard(s) for this task?

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Facilitator's Guide

Throughout facilitation of this activity it will be important to remind participants:

- Use the grade-level overview to determine the relevant cluster(s) to look at more closely
- Questions regarding Standards for Mathematical Practices will only be indicated where specific practices were identified within the source of the task alignment. Additionally, emphasize to participants the statement at the end of each cluster within the *KAS for Mathematics*, "The identified mathematical practices, coherence connections, and clarifications are possible suggestions; however, they are not the only pathways."

Sample Task 1:

This assignment is strongly aligned to the standards.

Overview

Second-grade students add within 1000 and explain whether a provided addition strategy will work. This assignment is strong because it builds upon the conceptual understanding of addition that students developed in earlier grades, but with increasingly larger numbers, as is appropriate for second grade.

Related Standards

KY.2.NBT.7: Add and subtract within 1000. a. Represent and solve addition and subtraction problems using concrete models or drawings strategies based on place value properties of operations the relationship between addition and subtraction and relate drawings and strategies to expressions or equations. b. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
KY.2.NBT.9: Explain why addition and subtraction strategies work, using place value and the properties of operations.

Why is this assignment strongly aligned?

This assignment is well-aligned with both second-grade standards KY.2.NBT.7 and KY.2.NBT.9:

Standard KY.2.NBT.7 requires students to add and subtract within 1000 using various representations and strategies. In part one of this assignment, students are asked to add 145 + 436 using physical or visual representations (base-ten blocks or drawings).
Standard KY.2.NBT.9 requires students to explain why addition and subtraction strategies work. In part one of this assignment, students have to explain the strategy they used to add 145 + 436. In part two, students have to critique the addition strategy used by another student.

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This assignment builds students' conceptual understanding of addition, in both standards KY.2.NBT.7 and KY.2.NBT.7. Representing numbers physically or visually—for example, through quick drawings of hundreds squares, tens sticks, and ones dots—and explaining strategies ensures that students continue building understanding of place value and addition within the base-ten system that they began developing in earlier grade levels (as students add conceptually within 10 in kindergarten, within 100 in first grade, and within 1000 in second grade). The specific addition strategy used in part two of the assignment (adding hundreds first, then counting on to add the tens and ones) also appropriately builds students' conceptual understanding by reinforcing place value.

Practice Standards

This assignment allows students to engage meaningfully with multiple mathematical practice standards. Directing students to use base-ten blocks or drawings to add and allowing students to choose which representation they want to use gives students the chance to engage with Mathematical Practice Standard #5 ("Use appropriate tools strategically"). Asking students to explain their addition strategy and evaluate the strategy used by another student gives students the chance to engage with Mathematical Practice Standard #3 ("Construct viable arguments and critique the reasoning of others") and Mathematical Practice Standard #6 ("Attend to precision"). Asking students to evaluate an addition strategy that involves decomposing a three-digit number into hundreds, tens, and ones also gives students the chance to engage with Mathematical Practice Standard #7 ("Look for and make use of structure").

Sample Task 2:

This assignment is partially aligned to the standards.

Overview

Second-grade students use a ruler to measure the length of several objects in centimeters, which is only partially aligned with a second-grade standard. Measuring length in centimeters is appropriate, but the assignment doesn't ask students to choose the most appropriate tool to use based on the objects to be measured, as the second-grade standard requires.

Related Standards

We looked at how well the assignment aligned to the following standard:
KY.2.MD.1: Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks and measuring tapes.

Why is this assignment partially aligned?

This assignment is partially aligned with second-grade standard KY.2.MD.1, which requires students to select and use various standard tools such as meter sticks to measure length. In this assignment, students use a centimeter ruler to measure the length of several objects. Measuring length in centimeters with a ruler is appropriate, but students didn't get to select the most appropriate tool to use given the objects being measured. This is a key aspect of KY.2.MD.1, because part of measurement proficiency is understanding that unit size matters and that it's more efficient to measure objects of different sizes with different units. For example, centimeters are appropriate when measuring the length of a paper clip, while meters are better suited for measuring the length of a room.

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This assignment builds students' procedural skill, outlined in standard KY.2.MD.1. Students have multiple opportunities to practice using a concrete tool (centimeter ruler) to measure length. Students must use the tool correctly (for example, aligning the edge of the object at the zero mark on the ruler) to accurately complete the problems.

Practice Standards

This assignment gives students a chance to superficially engage with Mathematical Practice Standard #5 ("Use appropriate tools strategically"). Students repeatedly practice using the tool of a centimeter ruler to measure length but aren't required to select the most appropriate tool to use given the objects to be measured. Selecting the most appropriate tool would give students a meaningful opportunity to engage with the practice standard.

Sample Task 3:

This assignment is weakly aligned to the standards.

Overview

Second-grade students use a number line to subtract within 20. This assignment is weak because it is more closely aligned with a first-grade standard. Second-grade students should be fluently subtracting within 20 in their heads, not using tools such as number lines to help them subtract.

Related Standards

We looked at how well the assignment aligned to the following standard:
KY.2.OA.2: Fluently add and subtract within 20 using mental strategies.

Why is this assignment weakly aligned?

This assignment is aligned to a first-grade standard (KY.1.OA.6), not a second-grade one. In second grade, students should build on what they learned in first grade to mentally add and subtract fluently within 20. In this assignment, three of the five problems appropriately involve minuends in the teens (for example, 18-3), but two problems only involve subtracting within 10 (again, more closely aligned to KY.1.OA.6). The use of number lines is inappropriate for second grade, and students are not required to use any of the mental strategies outlined in second-grade standard KY.2.OA.2.

Second-grade standard KY.2.OA.2 targets procedural skill and fluency through the focus on using mental strategies to add and subtract fluently. The use of number lines does not give students an opportunity to use mental strategies to solve the problem.

Practice Standards

This assignment involves one mathematical practice standard, but it does so in an inappropriate way. Students are given number lines to help them subtract, which is related to Mathematical Practice Standard #5 ("Use appropriate tools strategically"). However, this is an inappropriate use of a tool given that standard KY.2.OA.2 targets procedural skill and fluency; students should be solving the problems using mental strategies, not tools like number lines.

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Furthermore, some problems can easily be solved without using a number line, which makes the focus of the assignment more about how to use the tool than about building students' ability to choose the most appropriate tool (if needed) to solve a specific problem.

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